CLEAN AIR ACT COMPLIANCE THROUGH POLLUTION PREVENTION IN AIR COMBAT COMMAND

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ABSTRACT
In the next ten years, ACC will face compliance challenges with approximately 200 new National Emission Standards for Hazardous Air Pollutants (NESHAPs) to be promulgated and increasingly tighter National Ambient Air Quality Standards expected, to say nothing of the possible changes to the major source categories for criteria pollutants and Hazardous Air Pollutants (HAPs). For ACC, in the current arena of limited resources, continued process specific pollution prevention is the only viable means to compliance under the Clean Air Act (CAA). This paper discusses Air Combat Command's (ACC's) pollution prevention approach to compliance with the CAA.

The Aerospace NESHAP, in combination with Title V operating permits, is the first wave of CAA requirements to influence ACC's method for meeting it's primary mission, flying aircraft. Each process was evaluated to determine the greatest probability for emissions reductions; all large sources of air pollution on base, for example aircraft corrosion control, were identified with an increased focus on pollution prevention opportunities. By implementing the results of this analysis, supplemented by revision of air emissions inventories to incorporate more recent guidance and remove inaccuracies as well as modification

of permits and permit applications to include limits, ACC is avoiding the onerous requirements of Aerospace NESHAP by maintaining low levels of HAP emissions. ACC will now address reduction of emissions to below the Title V permit limits. ACC continually utilizes pollution prevention to reduce the regulatory requirements and liability for enforcement under the CAA.

INTRODUCTION

The increasing number of regulations promulgated as a result of the Clean Air Act Amendments and the rising cost of environmental compliance options results in the search for alternatives to traditional compliance avenues. ENVVEST, a program initiated by President Clinton, even allows regulatory relief for temporary non-compliance when the end result is compliance and substantially reduced air pollution. In Air Combat Command (ACC) we initiated pollution prevention initiatives to reduce the initial price and the overall cost of air quality compliance as well as decrease the regulatory burden. Our first initiative focused on the reduction of hazardous air pollutant (HAP) emissions to below National Emission Standards for Hazardous Air Pollutants (NESHAP) trigger limits, and we are currently involved in the reduction of criteria pollutants below Title V trigger limits.

ACC EMISSION REDUCTION INITIATIVES

The first focused initiative at ACC bases was to reduce the potential emissions from Hazardous Air Pollutants (HAPs) to below 10 tons per year for any single HAP and below 25 tons per year for total HAPs. This involved a combination of pollution prevention, correction and revision of our emissions data, incorporation of new policies, installation of control equipment and accepting federally enforceable limits. ACC defines pollution prevention as a change to the process resulting in reduced emissions or less hazardous emissions. This is often substitution of a paint or coating for one that emits reduced hazardous air pollutants, but still emits volatile organic compounds. Another example of pollution prevention is the exchange of a solvent washer for an aqueous parts washer; the exchange of a solvent, often a halogenated solvent, with a solution of detergent and water, much like a home dishwasher. This definition does not include control technology to reduce released emissions, or "end of pipe" fixes, but we include some of those here because none we used are required at ACC bases due to regulatory requirement

This initiative also included a complete review of all emissions data for each base, assessing accuracy of input data, calculations, and realignment with current Environmental Protection Agency (EPA), Air Force and ACC policies. We found adjustments to be made in all categories, resulting in greatly reduced emissions overall. Inaccuracies included misplaced decimal points in input data and overly conservative assumptions for emissions calculations. Realigning base data with new policies allowed us to use 500 operating hours for potential emissions for emergency generators, rather than 8760 operating hours. We subtracted known waste amounts from emission streams to more accurately reflect the process emissions. We also incorporated process limits for operations such as surface coating aircraft and vehicles[1], and used overall limits on gasoline and jet fuel to become minor sources for HAPs. Thus far, bases are taking limits that are still 3 to 5 times more than the base is expected to require, even in a mobility situation. The initial and current potential emissions for the ACC bases are provided in Exhibits 1 and 2.

After addressing the overall base compliance strategies, we then concentrated on the areas for greatest improvement, surface coating and fuels.

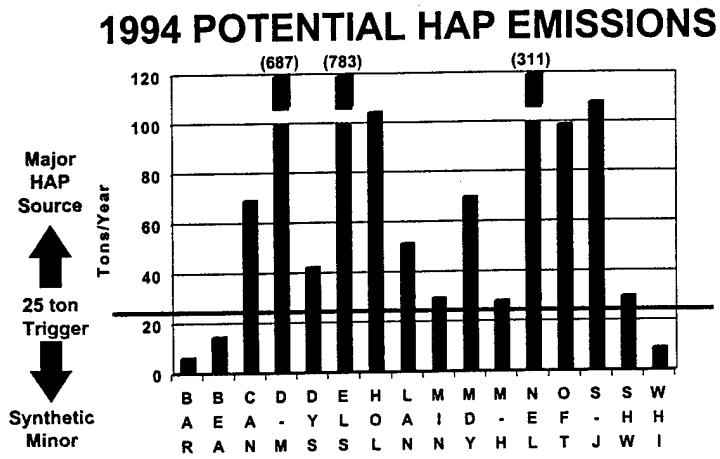

Exhibit 1: Potential Hazardous Air Pollutant Emissions for Air Combat Command Bases

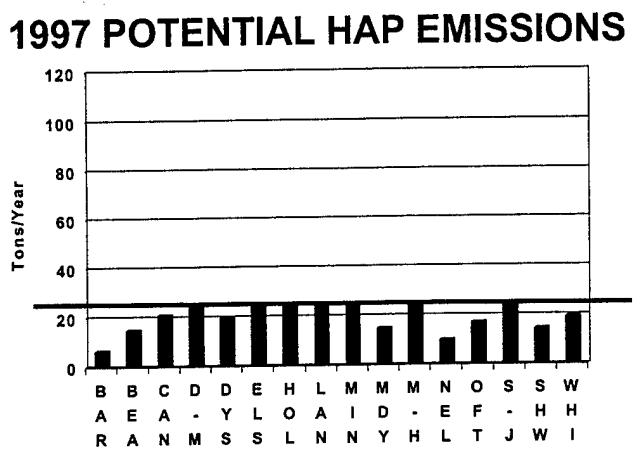

Exhibit 2: Revised Potential Hazardous Air Pollutant Emissions for Air Combat Command Bases

Surface Coating

Surface coating operations are the single largest source of pollutants, both HAPs and criteria pollutants, at a base. For reductions in this critical area, we focused on equipment and process improvements. We replaced the standard spray paint guns with High Volume Low Pressure (HVLP) spray guns to take advantage of the 90 percent transfer ratio. Some bases even installed electrostatic deposition guns for an even higher transfer ratio. Computerize paint measuring and mixing systems and automatic paint gun washers using low volatile organic compound (VOC)/low HAP solutions further allow emissions reductions through technology.

The first focus of our efforts to reduce emissions, both actual and potential, through process changes, was the documentation of our surface coating processes. Since ACC surface coating processes are batch processes, not continuous processes, 8760 operating hours for spray guns is not a realistic assumption. Our process limits require preparation of the aircraft or vehicle for painting (move it into the paint bay, tape off windows, etc.), painting of the aircraft or vehicle, then drying time (or cure time), and moving the aircraft or vehicle out of the paint bay before another one is moved in. We also found that our painters required training and a paradigm shift to realize material and emission reduction with the new spray guns. Our intensive 3 day training program for the painters resulted in increased transfer efficiency, reduced paint usage per paint job, reduced defects and repaints and a greater understanding of the recordkeeping requirements and importance of minimizing emissions. For individual training sessions, paint usage reductions of 30 - 50 percent are

common. Further process changes include more efficient loading of the automatic gun washers and utilization of extra nozzels to facilitate once per day wash cycles.

ACC is continuing the pollution prevention efforts for surface coating by developing specific application methods for each individual type of aircraft and each specific surface coating facility. We expect this ongoing effort to yield further benefits with reduced paint use per aircraft, improved quality of surface, reduced repaints due to inadequate surface quality, and increased life of surface coating as a result of greater consistency of coating thickness.

Fuels

Some ACC bases are installing control equipment to reduce emissions and ease record keeping. The best example is the installation of a vapor recovery system on a gas station. The gas station was designed to accept a vapor recovery system, yet the system is not required in the area. However, installation of the vapor recover system was relatively inexpensive and reduced potential and actual emissions by approximately 10 tons per year; a minimum of 88 percent reduction in VOCs, 49 percent of which are HAPs.

ACC saved many tons of emissions, VOCs and HAPs, by changing fuels from JP-4 to the less volatile JP-8. The emission factor for JP-8 is 0.1, compared with 2.69 for JP-4.

REDUCING REGULATORY OVERSIGHT

This leads to another benefit of pollution prevention, or emission reduction; reducing environmental liability and reducing regulatory oversight. ACC is accomplishing this by reducing the number of air sources that must comply with standards, reducing the number of standards that must be complied with and minimizing overall air emissions. The first initiative discussed above, reduction of HAPs, enabled ACC bases to avoid requirements of the Aerospace NESHAP. The reduction of criteria pollutants will enable bases to avoid the requirements of Title V permits, particularly severe due to the self-reporting and self-monitoring requirements. These two major efforts allowed bases to decrease the number of rules sources are subject to, and the number of sources subject to any rule. This reduces the number of chances for a notice of violation. We also believe these reductions lessen the chances of regulatory inspection.

ACC bases are also working to segment the Title V permit into a source consisting of the major source itself, but omitting many small, otherwise incidental, co-located sources. This can greatly reduce the liability and regulatory oversight expected from such a permit due to the alleviation of the self-monitoring and self-reporting requirements for the small sources. While this seems to allow for greater pollution, in these times of severely limited resources, it allows us to concentrate our resources on the major source to truly reduce emissions overall and better manage the emissions from the large source. The best example is the large corrosion control facility for aircraft where we install an efficient filtration system for VOC as well as HAP particulate and custom mixing equipment that allows us to reduce air emissions, paint usage and hazardous waste generation over the long run, rather than installing only VOC controls at the two other small corrosion control facilities for parts and occasional vehicle use in addition to the large facility. These changes, in combination with true elimination of sources no longer needed, allow ACC bases to reduce emissions and improve operational flexibility.

CONCLUSION

All requirements of the Clean Air Act encourage, if not require, emission reduction. By reducing emissions prior to the date required for compliance an installation can escape the more onerous requirements of the regulations and achieve the overall goal of reducing pollution and protecting the environment. The reduced regulatory impact also reduces the potential impact on mission from environmental concerns and reduces the cost of doing business from reduced permit fees, reduced permit maintenance and required controls. Therefore, pollution prevention, and emission reduction and control, for ACC is the key to mission flexibility.

REFERENCES

1. Seitz, John S., Director, Office of Air Quality Planning and Standards (MD-10), 25 January 1995 Memorandum, Subject: Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act.
2. Seitz, John. S., Director, Office of Air Quality Planning and Standards (MD-10), 27 August 1996 Memorandum, Subject: Extension of January 25, 1995 Potential to Emit Transition Policy.
3. Seitz, John S., Director, Office of Air Quality Planning and Standards (MD-10), 2 August 1996 Memorandum, Subject: Major Source Determinations for Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act.
4. 40 Code of Federal Regulations Parts 9 and 63. Published in the Federal Register 1 September 1995.
5. Buckheit, Bruce, Director Air Enforcement Division, Office of Enforcement and Compliance Assurance, and Lydia N. Wegman, Deputy Director, Office of Air Quality Planning and Standards, 3 November 1997 Memorandum, Subject: Discussion Paper on Options For the Potential to Emit Rulemaking.
6. Seitz, John S., Director, Office of Air Quality Planning and Standards (MD-10), 6 September 1995 Memorandum, Subject: Calculating Potential to Emit (PTE) for Emergency Generators.
7. Seitz, John S., Director, Office of Air Quality Planning and Standards (MD-10), 3 November 1993 Memorandum, Subject: Approaches to Creating Federally-Enforceable Emissions Limits.

AIR FORCE BASE NAME ABBREVIATIONS

Abbreviation	Air Force Base Name
BAR	Barksdale
BEA	Beale
CAN	Cannon
D-M	Davis-Monthan
DYS	Dyess
ELS	Ellsworth
HOL	Holloman
LAN	Langley
MIN	Minot
MDY	Moody
M-H	Mountain Home
NEL	Nellis
OFT	Offutt
S-J	Seymour Johnson
SHW	Shaw
WHI	Whiteman